51 mm (2") photomultiplier
9817B series data sheet

ET Enterprises electron tubes

1 description

The 9817B is a 51mm (2”) diameter end window photomultiplier, with S20 infra-red sensitive photocathode, and 12 BeCu dynodes of linear focused design.

2 applications

- high energy physics studies
- film scanners

3 features

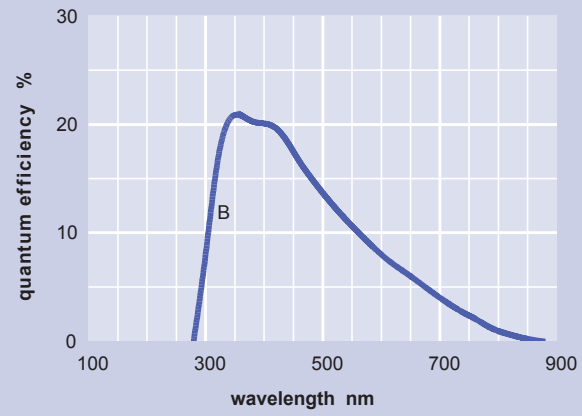
- high pulsed linearity

4 window characteristics

	9817B borosilicate
spectral range *(nm)	290 - 870
refractive index (n_d)	1.49
K (ppm)	300
Th (ppb)	250
U (ppb)	100

* wavelength range over which quantum efficiency exceeds 1 % of peak

5 typical spectral response curves

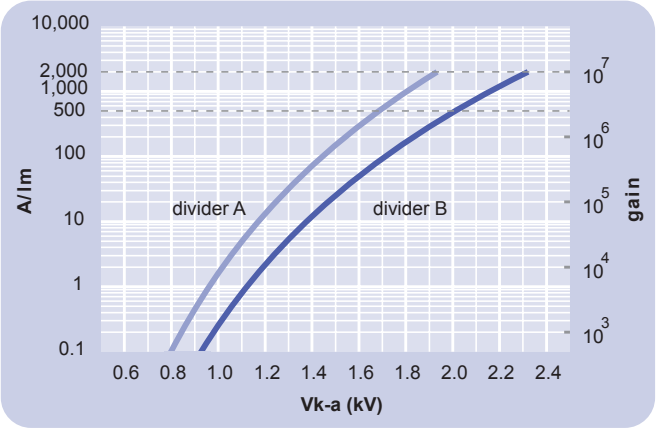


6 characteristics

	unit	min	typ	max
photocathode: S20				
active diameter	mm		46	
quantum efficiency at peak	%		21	
luminous sensitivity	µA/lm	120	200	
with CB filter			9	
with CR filter			90	
with IR filter			12	
dynodes: 12LFBeCu				
anode sensitivity in divider B:				
nominal anode sensitivity	A/lm		500	
max. rated anode sensitivity	A/lm		2000	
overall V for nominal A/lm	V		2000	2400
overall V for max. rated A/lm	V		2300	
gain at nominal A/lm	x 10^6		2.5	
dark current at 20 °C:				
dc at nominal A/lm	nA		10	100
dc at max. rated A/lm	nA		40	
dark count rate	s^{-1}		15000	
pulsed linearity (-5% deviation):				
divider A	mA		50	
divider B	mA		150	
rate effect (I_a for $\Delta g/g$=1%):	µA		1	
magnetic field sensitivity: the field for which the output decreases by 50 %				
most sensitive direction	T x 10^{-4}		1	
temperature coefficient:	% $°C^{-1}$		± 0.5	
timing:				
single electron rise time	ns		2	
single electron fwhm	ns		3	
single electron jitter (fwhm)	ns		2.2	
transit time	ns		41	
weight:	g		160	
maximum ratings:				
anode current	µA			100
cathode current	nA			1000
gain	x 10^6			10
sensitivity	A/lm			2000
temperature	°C	-80		60
V (k-a)(1)	V			2800
V (k-d1)	V			500
V (d-d)(2)	V			450
ambient pressure (absolute)	kPa			202

(1) subject to not exceeding max. rated sensitivity (2) subject to not exceeding max rated V(k-a)

7 typical voltage gain characteristics



8 voltage divider distribution

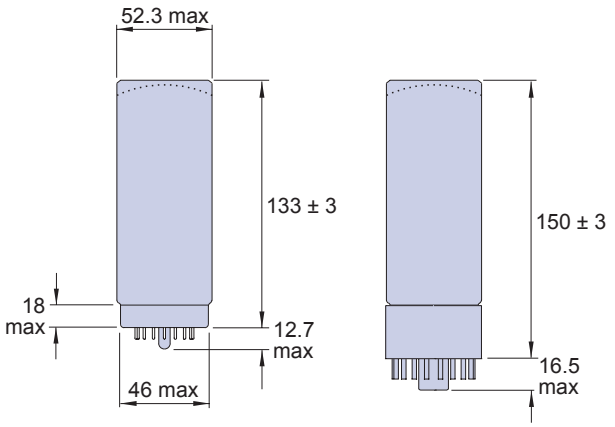
	k	d_1	d_2	d_{11}	d_{12}	d_{13}	d_{14}	a	
A	300V	R	.....	R	R	R	R	R	Standard
B	300V	R	.....	R	1.25R	1.5R	2R	3R	High Pulsed linearity

note: focus connected to d_1

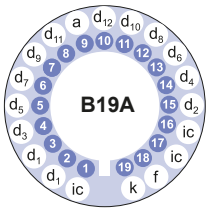
Characteristics contained in this data sheet refer to divider B unless stated otherwise.

9 external dimensions mm

The drawings below show the 9817B in hardpin format and the 9817KB with the B20 cap fitted.

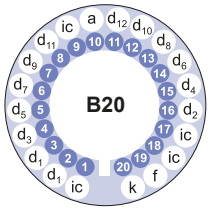


10 base configuration (viewed from below)



B19A hardpin base
(for 9817B)
'ic' indicates an internal connection

note: connect f to d_1



B20 cap
(for 9817KB)
'ic' indicates an internal connection

note: connect f to d_1

Our range of B19A sockets is available to suit the hardpin base. Our range of B20 sockets is available to suit the B20 cap. Both socket ranges include versions with or without a mounting flange, and versions with contacts for mounting directly onto printed circuit boards.

11 ordering information

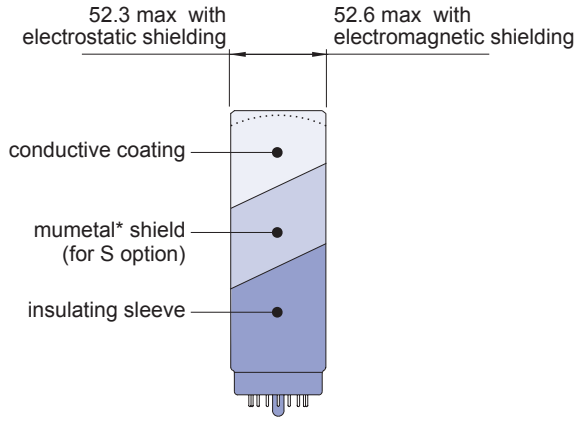
The 9817B meets the specification given in this data sheet. You may order **variants** by adding a suffix to the type number. You may also order **options** by adding a suffix to the type number. You may order product with **specification options** by discussing your requirements with us. If your selection option is for a one-off order, then the product will be referred to as 9817A. For a repeat order, ET Enterprises Limited will give the product a two digit suffix after the letter B, for example B21. This identifies your specific requirement.

9817 □ □ □

base options
K capped

options
S electromagnetic shielding see drawing below
M supplied with spectral response calibration

specification options
B as given in data sheet
A single order to selected specification
Bnn repeat order to selected specification



12 voltage dividers

The standard voltage dividers available for these pmts are tabulated below:

9817B	9817KB	k	d_1	d_2	d_{10}	d_{11}	d_{12}	d_{13}	d_{14}	a
C638A	C640A	3R	R	.....	R	R	R	R	R	
C638B	C640B	3R	R	.....	R	1.25R	1.5R	2R	3R	
C638C	C640C	300 V	R	.....	R	R	R	R	R	
C638D	C640D	300 V	R	.....	R	1.25R	1.5R	2R	3R	

R = 330 kΩ note: focus connected to d_1

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